

# ASAF'S *BOOK OF MEDICINES*: A HEBREW ENCYCLOPEDIA OF GREEK AND JEWISH MEDICINE, POSSIBLY COMPILED IN BYZANTIUM ON AN INDIAN MODEL\*

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Like all medieval Jewish medical works, the Hebrew *Book of Medicines*, attributed to Asaf the Sage, is predominantly based on Greek concepts. However, as far as I know, it is the only work in any language in which aspects of medicine are also systematically presented in the light of Jewish ideas. Such treatment is not even found in the Bible or Talmud, the bases of Jewish thought: these works contain no *systematic* consideration of medical matters, and those discussed are regarded primarily from the legal point of view.<sup>1</sup>

In ancient Israel the Biblical declaration: "I am the Lord that healeth thee" (Exodus 15:26), was generally interpreted in the most literal terms. This attitude was reinforced by the sad story of King Asa, who called in the doctors when he was sick (II Chronicles 16:12–13), as contrasted with the healing of King Hezekiah, who trusted to God alone (II Kings 20:1–11). Yet the Bible provides an alternative view, since it is also maintained that if two

men fight and one is injured, the other must "cause him to be thoroughly healed" (Exodus 21:18–19). Thus there was always a place for professional medicine, and the Talmud shows that while one school of rabbis maintained that "men have no power to heal," this was opposed by others who claimed that "a man should not speak thus," since, from the above verses of Exodus, "we learn that permission has been given to the physician to heal."<sup>2</sup>

Yet, while the practice of medicine came to be tolerated, medical writings in Hebrew were far longer proscribed. A story from Mishnaic times, often subsequently repeated, refers to a possibly legendary work, a *Book of Medicines* (*Sefer Refuot*) said to have been suppressed by King Hezekiah—a move with which later rabbis concurred.<sup>3</sup> In any case, apart from the book of the same name attributed to Asaf, the dating of which is by no means certain, no Hebrew medical work is known prior to the tenth century.

Moreover, few medical writings by Jews in languages other than Hebrew are known from before that date. The earliest extant treatises of this kind are by Isaac Israeli (c. 855–955), who wrote in Arabic. However, Galen (129–after 210) refers a number of times to Rufus of Samaria, a contemporary Jewish physician who produced commen-

[The reader is referred to the list of abbreviations at the end of the volume.]

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<sup>1</sup> According to Jewish tradition the Pentateuch constitutes the Written Law while the Talmud, including the Mishnah, represents the main body of the Oral Law. The Mishnah, a collection of oral laws based on the Bible, was completed around the end of the second century of this era. Two versions of the exegesis of the Mishnah by numerous scholars, the "Babylonian" and the "Jerusalem" Talmuds, were written down in the fifth and seventh centuries, respectively. English trans.: *The Mishnah*, ed. and trans. H. Danby (Oxford, 1950); *The Babylonian Talmud*, ed. I. Epstein (London) (hereafter, *BT*).

<sup>2</sup> See *BT* Berakhot 60a. This also cites a prayer to be said by the patient before submitting to bloodletting, which includes the words, "Thou art a faithful healing God, and thy healing is sure." On the subject in general see G. Vermes, *Jesus the Jew* (Philadelphia, 1981), 59–60; and I. Jakobovits, *Jewish Medical Ethics* (New York, 1959), chap. I.

<sup>3</sup> Baraita to Pesahim 4, 8. Danby, *Mishnah*, note 7 to 141. Also *BT* Pesahim 56a = Berakhot 10b.

taries on Hippocratic works in Greek<sup>4</sup> while, according to Arab sources, a Syrian Jewish physician named Māsarjawaih not only translated a medical encyclopedia, the *Pandects* of Ahrūn, from Syriac to Arabic around A.D. 684, but he also added two treatises of his own.<sup>5</sup> Thus he is one of the first translators of medical works into Arabic, and also the earliest known medical writer in that language. However, like almost all Jewish medical authors, Isaac Israeli based himself almost exclusively on Greek medical concepts, and provided no Jewish content whatsoever; and the same was almost certainly true of Rufus and Māsarjawaih. This trend was later epitomized by the medical works (all written in Arabic) of Maimonides (1135–1204), the greatest Jewish philosopher and theologian.<sup>6</sup>

In this, Jewish medical writers resembled their Christian and Muslim colleagues in Byzantium and the medieval Islamic world. Byzantine Christians continued the ancient Greek pagan tradition of medicine, largely in the form of commentaries on Hippocratic works or, like Paul of Aegina in the seventh century, produced medical encyclopedias, in conformity with the general Byzantine trend of compiling encyclopedias of classical learning.<sup>7</sup> The Arabs, on the other hand, lacked ancient written traditions of any kind. Thus, in the eighth century, in the lands newly conquered by Islam, they mounted a fresh, though now bloodless, campaign. With the revelation of the Koran they had become a "People of the Book," like the Jews and the Christians. Now they made a conscious attempt to acquire, like them, an ancient tradition of book-learning. Through their Syrian Christian subjects and allies they were able to procure that large part of the ancient Greek heritage of philosophy, medicine, and science which the Syrians already pos-

sessed,<sup>8</sup> and were now prepared to translate into Arabic for their new masters. By the tenth century the Muslims had achieved their aim. Selected works on all these subjects, including almost the whole Galenic corpus, were available in Arabic.<sup>9</sup>

Yet, as far as medicine was concerned, the Christians and Muslims, like the Jews, had always faced a quandary. While recognizing the need for medical practice, the key for one lay in the New Testament, for the other in the Koran.<sup>10</sup> A compromise solution, which was eventually to be adopted by all three religions, had already evolved by the sixth century—through the early Syrian translators, many of them monks, who had studied medicine in Alexandria and elsewhere. Medical literature would be based on ancient Greek writings (a principle which continued to form the theoretical basis of Western medicine up to very recent times), but it was to be entirely free of theology. Whereas medical parallels continued to be invoked in theological debates, religion was not to be used either to support or to oppose the views expressed in medical works.<sup>11</sup> This was only made possible by the fact that Greek medicine—like much of Aristotelian philosophy—makes practically no allusion to pagan beliefs, nor, on the whole, do its basic tenets conflict with monotheistic ideas.<sup>12</sup>

<sup>8</sup> According to J. Tkatsch, *Die arabische Uebersetzung der Poetik des Aristoteles*, I (Vienna, 1928), 54 and 56, the Syrian Christians were already using Aristotelian logic in the third century for their schismatic disputes, and they began to translate philosophical works into Syriac in the fifth century at the latest. However, the earliest known Syriac translations of Greek medical works are those of Sergios of Reš'ainā (d. 536). It is probably not by chance that Sergios, though a Jacobite, had Nestorian leanings (*ibid.*, 66), that the later translators of Greek medical works into Arabic were mainly Nestorians, and that Nestorian missionary activity was so strongly associated with all aspects of medicine. Medicine conformed with their particular religious beliefs, even though it was pagan Greek medicine which they did so much to propagate.

<sup>9</sup> See *ibid.*, 55 and T. J. de Boer, *The History of Philosophy in Islam*, trans. E. R. Jones (London, 1903), 10–30. On the translations of Galen, see, "Hunain ibn Ishāq ueber die syrischen und arabischen Galen-Uebersetzungen," ed. and trans. G. Bergstraesser, *AbhKM*, 17 (1925).

<sup>10</sup> Among Muslims this was expressed in a small number of works from highly orthodox circles, expounding the so-called Medicine of the Prophet. See Ullmann, *Medizin*, 185–89; F. Klein-Franke, *Vorlesungen ueber die Medizin im Islam* (Wiesbaden, 1982), SA, Beiheft 23, 109–32.

<sup>11</sup> Such "separation of Church and State" in medical literature was of course an entirely unwritten rule. I know of no actual reference to it in the writings of the time.

<sup>12</sup> While Byzantine medicine on the whole, "in spite of its Hellenistic origins and traditions saw its duty of healing the sick in strictly Christian terms" (A. Sharf, *The Universe of Shabbetai Donnolo* [Warminster, 1976], 104), this attitude is not reflected

<sup>4</sup> *Galen in Hippocratis Epidemiarum Libr. VI, Comm. I–VIII*, ed. E. Wenkebach and F. Pfaff, *CMG V* 10, 2, 2 (Berlin, 1956), esp. 213, 289, 293, 413.

<sup>5</sup> See Sezgin, *Geschichte*, III, 166–67, 206–7, 224–25.

<sup>6</sup> On these works see E. Lieber, "Galen: Physician as Philosopher, Maimonides Philosopher as Physician," *BHM*, 53 (1979), 268–85. However, in one medical work Maimonides did introduce a purely theological polemic, which was originally found in one of his philosophical works. See J. Schacht and M. Meyerhof, "Maimonides against Galen on Philosophy and Cosmogony," *Bull. Faculty of Arts, Cairo University*, 5 (1939), 53–88.

<sup>7</sup> See O. Temkin, "Byzantine Medicine: Tradition and Empiricism," *DOP*, 16 (1962), 95–115 (= *Double Face*, 202–22). On Byzantine encyclopedias in general, see P. Lemerle, *Le Premier Humanisme byzantin* (Paris, 1971), 267–307, and on their medical encyclopedias, L. Thorndike, *A History of Magic and Experimental Science*, 8 vols. (New York, 1923–58), I, 566–93.

This trend in medical writing was reinforced by the fact that during the ninth and tenth centuries Byzantium too experienced a general revival of Greek learning, although here, unlike the Muslim endeavor, it also comprised historical and literary works.<sup>13</sup> As with the Muslims, however, the intention seems primarily to have been an attempt to unearth and absorb an ancient tradition; for by this period the Byzantines had almost lost contact with their own ancient culture, in its original form. Despite their Christian beliefs, they now felt the need to revert to their pagan Greek roots.

Hence, throughout the medieval world the goal was adherence to tradition rather than originality of thought. Yet the Muslims soon started to build on this alien foundation, and to make use of their newly-found knowledge for their general advancement. In the medical field they produced encyclopedic and other works in which ancient Greek experience was adapted to their own time and place.

In Byzantium, however, the ancient tradition was mainly copied and conserved. Yet the general search for roots undoubtedly influenced the small Jewish communities living in Apulia, deep in the south of Italy, which in the ninth to eleventh centuries re-

mained under Byzantine rule.<sup>14</sup> Here Greek was still a living language,<sup>15</sup> in addition to Latin. However, the Jews also knew Hebrew, although only now did it become the vehicle for secular writings. Details of the everyday life of the Jews in Oria, one of these Apulian communities, are provided by the Hebrew *Book of Genealogies* (*Sefer Yuhasin*), written by Ahima'ats in 1054. It also shows that their spiritual center lay with the Jewish communities in Muslim lands, with which they had close personal ties. In this way, as well as through the numerous Muslim invasions of southern Italy, they were influenced by developments in both Byzantium and the Islamic world.<sup>16</sup>

The *Book of Genealogies* was but one of a number of Hebrew works which appeared in Byzantine Italy over this period. One might almost speak of a Hebrew mini-Renaissance, which resembled its Greek counterpart insofar as it included historical writings, as well as works on philosophy and medicine. While the *Book of Genealogies* seeks only to establish a local historical tradition, the other works we possess in this group go further in seeking out cultural roots. As far as non-medical works were concerned, an attempt was made to adapt the ancient Jewish written tradition to secular purposes. But even here the tradition followed was not Jewish alone, for ever since Hellenistic times it had been closely interwoven with strands of Greek culture.

These trends are plainly evident in another Hebrew historical work from Italy,<sup>17</sup> probably from the Byzantine south,<sup>18</sup> this time by an anonymous author. It appeared in 953,<sup>19</sup> and came to be known as the *Book of Yosippon* (*Sefer Yosippon*). Though dealing with the general history of the Jews up to the author's own time, it is largely based on Latin versions of the works of Josephus (37/8–after 100).

in the medical literature. Yet, as an example of such Christian influence, the sixth-century Alexander of Tralles is said by Sharf (104–5) to “prescribe prayers together with his potions,” in his medical encyclopedia. This claim is based on the inclusion of a monotheistic incantation in one of the many magical prescriptions in the work. The recipe is quoted in full by Thorndike [n. 7 above], I, 583–84, who merely comments that it shows “Jewish or Christian influences.” Such prescriptions may, however, have been handed down for centuries or even millenia, and were often accompanied by pagan incantations which, in this case, included an adjuration to the plant to heal the patient. Like any ancient adjuration or oath, it contains an invocation to supernatural forces and a curse, to ensure that the oath be kept. In this work by a respected Christian physician an invocation to pagan gods would clearly not be appropriate. It has therefore assumed a more acceptable monotheistic form, through the replacement of their names by Hebrew synonyms for the name of the Deity, although “mother earth” still remains. Similarly, the example of Lot's wife is now invoked as a curse. (For corresponding changes in Arabic and Persian literature, see G. Strohmaier, “Hunayn ibn Ishāq et le Serment Hippocratique,” *Arabica*, 21 [1974], 318–23). This Judaic mutation may indicate that the prescription once passed through Jewish hands, or may merely be due to the fact that Jews were supposed to be adept at magic. In any case, the absence of any purely Christian reference clearly denotes that such an incantation cannot be taken as a sign of Christian religious influence on Byzantine medical writings. Temkin, “Byzantine Medicine,” p. 110 = *Double Face of Janus*, 215–16, presents an exceptional example of the converse tendency in a medical work, whereby a certain Theophilus (? seventh century) opposes the Biblical, as well as the Homeric concept of the primary seat of the soul, in favor of the medical (Galenic) point of view.

<sup>13</sup> See Lemerle, *Le Premier Humanisme* (n. 7 above), 29 f.

<sup>14</sup> On Byzantine Jewry in general, see J. Starr, *The Jews in the Byzantine Empire 641–1204* (Athens, 1939); A. Sharf, *Byzantine Jewry from Justinian to the Fourth Crusade* (London, 1971).

<sup>15</sup> The vexed question of the knowledge of Greek in Byzantine southern Italy in general is summarized in G. Rohlfs's review of St. C. Caratzas, “L'origine des dialectes néo-grecs de l'Italie méridionale,” *BZ*, 52 (1959), 99–104. As regards the Jews see Sharf, *Donnolo* (n. 12 above), 97–8.

<sup>16</sup> *The Chronicle of Ahimaaz*, trans. M. Salzman (New York, 1924), *passim*.

<sup>17</sup> The work has never been translated. Critical edition of the text with commentary: *The Josippon (Josephus Gorionides)*, ed. D. Flusser, 2 vols. (Jerusalem, 1978 and 1980).

<sup>18</sup> *Ibid.*, II, 84–98.

<sup>19</sup> *Ibid.*, II, 79–84. The Byzantine origin and this dating have both been contested by Golb, in N. Golb and O. Pritsak, *Khazarian Hebrew Documents of the Tenth Century* (Ithaca, New York, 1982), 89, note 47.

Josephus, who had been a leader of the Jewish revolt against the Romans in Palestine, was captured by Vespasian, the Roman commander. However, he predicted that Vespasian would soon become Emperor, and after this indeed came to pass, he was released and honored by Vespasian,<sup>20</sup> subsequently spending the rest of his life in Rome, where he wrote his historical works.

Hence Josephus, as he himself notes, was considered as a traitor by the Jews,<sup>21</sup> who ignored his writings for centuries, even though these favored the Jewish point of view. The Church, on the other hand, "embraced the outcast."<sup>22</sup> In their Greek and Latin versions his writings were always of interest to Christians, including the Byzantine chroniclers, since they constituted an excellent source of the history of Israel and Rome in and around the time of Jesus. In the ninth century his main works were summarized in the *Bibliotheca* of Photius.<sup>23</sup> With the *Yosippon*, however, some kind of Hebrew version finally appeared, obviously intended for Jews.

In Byzantium, as in the medieval Islamic world, there were many Jewish physicians,<sup>24</sup> yet so far they lacked any tradition of medical writing. By the beginning of the tenth century medical and philosophical works by the celebrated Isaac Israeli had appeared in Arabic, and now books of this kind in Hebrew were to be written in Byzantine southern Italy by a physician named Shabtai bar Abraham, usually known as Donnolo. Donnolo himself tells us most of what we know about his life.<sup>25</sup> He was born at Oria and in 925, at the age of twelve, was taken captive by Arab raiders, together with others, Jews and Christians, from the town. He was eventually ransomed, and then set himself to study astronomy, astrology and medicine, for which purpose he traveled widely within the Byzantine Empire. He could probably read Greek and Latin, as

well as Hebrew, and he possibly also knew Arabic. Apart from his books, he became a well-known practitioner, and his name was even linked with the legendary founding of a "medical school" in Salerno, although there is no evidence that he ever had any connection with that city.<sup>26</sup>

Donnolo produced a treatise on pharmacy known as *The Book of Mixtures* (*Sefer ha-Mirqaḥot*) around the year 970.<sup>27</sup> This is not only the oldest extant medical treatise in Hebrew to which some kind of date can be given, it is also the oldest medical work of any kind from medieval Italy. In his Introduction Donnolo states that the book was designed to instruct the physicians of Israel in the art of dispensing medicines "according to the wisdom of Israel and Byzantium."<sup>28</sup> Yet nothing specifically Jewish is found in the work, which appears to be simply a Hebrew version of a typical Greek pharmaceutical text. Thus, although "the wisdom of Israel" may be an allusion to those apocryphal medical works mentioned in the Bible and Talmud, it is far more likely that it refers to the *Book of Medicines* attributed to Asaf, in which much of the same Hebrew botanical terminology is found.

Donnolo also wrote on astronomy and astrology, which in those days were inextricably linked, and on their connection with medicine.<sup>29</sup> However, even from the purely medical point of view, his most interesting work is that usually known as the *Hakhmoni*, a philosophical commentary on the mystical *Book of Creation* (*Sefer Yetsira*). Donnolo's was only one of the many commentaries on this anonymous Hebrew philosophical work, which was probably composed between the third and sixth centuries of the present era. However, it differs from the others in that it develops a theological argument along purely medical lines. In discussing Genesis 1:26–27, the creation of man in God's image, Donnolo uses analogies with the anatomy, physiology, and

<sup>20</sup> Josephus, *Jewish War* III, 392–408; IV 622–29 (Loeb, II, 686–91; III, 184–87 [Cambridge, Mass., 1926–65]). Suetonius, *Vespasian* V, 6. See also note 106 below. On the life of Josephus in general, see T. Rajak, *Josephus* (London, 1983).

<sup>21</sup> Josephus, *Jewish War* III, 434–39. See S. Dubnov, *History of the Jews*, trans. M. Spiegel, 6 vols. in 3 (New York and London, 1967–69), Vol. I, 782–83; E. Schuerer, *The History of the Jewish People in the Age of Jesus Christ*, new English version, ed. and revised G. Vermes and F. Millar, Vol. I (Edinburgh, 1973), 490–91, 494.

<sup>22</sup> *The Latin Josephus*, I, ed. F. Blatt (Copenhagen, 1958), 9–16.

<sup>23</sup> Photius (ed. Henry), I, pp. 32–35 and 155–58 [Cod. 47, 48, and 76], and V, 141–55 [Cod. 238].

<sup>24</sup> See Sharf, *Donnolo* (n. 12 above), 108–10.

<sup>25</sup> *Il commento di Sabbatai Donnolo sul Libro della Creazione*, ed. D. Castelli (Florence, 1880), 1–4; Sharf, *Donnolo* (n. 12 above), 7–10.

<sup>26</sup> M. Steinschneider, *Donnolo. Pharmakologische Fragmente aus dem zehnten Jahrhundert* (Berlin, 1868), 9.

<sup>27</sup> Text: *ibid.*, Suppl. G. Brecher, I–VI; translation: 124–53. Text only: S. Muntner, *R. Shabtai Donnolo*, 2 sections (Jerusalem, 1949), I, 7–23. *Ibid.*, 8 note 12, followed by Sharf, *Donnolo* (n. 12 above), 109, suggests a date between 970 and 980, since Donnolo claims to have written the work after "forty years" of experience. However, this experience might well have started while he was still in his teens. Moreover, the Jewish use of the number "forty" is often allegorical, referring to the years of wandering in the Wilderness, and thus merely denoting a long and weary period. Hence the true date of composition might be up to ten years earlier.

<sup>28</sup> Steinschneider, *Donnolo* (n. 26 above), Suppl., p. I. Muntner, *R. Shabtai*, I, 8.

<sup>29</sup> Sharf, *Donnolo* (n. 12 above), 4, 14–32.

even with the pathology of the body,<sup>30</sup> which seem largely to be based on the *Book of Medicines*, and contain a number of medical terms found only in that work. Interspersed with these are numerous Biblical quotations. A brief extract from this part of Donnolo's work, (without any reference to it) seems to be included in the *Yosippon*.<sup>31</sup>

A long fragment of a "Practica," a treatise on the diagnosis and treatment of diseases, is often attributed to Donnolo,<sup>32</sup> since it is found in the same manuscript as his *Book of Mixtures*. However, this manuscript also contains part of the *Book of Medicines*, and the fragment may well belong to the latter. Like the *Book of Mixtures* it is purely Greek in content, with no specifically Jewish features.

The *Book of Medicines* attributed to Asaf the Sage is a far more important and substantial medical work than anything so far described. This too may well be a product of Byzantine Italy in the ninth or tenth centuries, but as nothing definite is known about its authorship, provenance or dating, I have left its consideration to the last. It is an extraordinary work in many respects, not least because, as has already been noted, it breaks the "rules," and not only incorporates Jewish theological—and essentially Biblical—concepts, but even uses them to reinforce ancient Greek medicine.

This very long work has never been published in full,<sup>33</sup> and I am at present preparing the first critical edition of the text from all the known manuscripts, together with a translation and commentary. The present description is thus solely a progress report, and in view of the many difficulties involved in this task, only a few of which can be touched upon here, any conclusions presented are tentative indeed.

The longest version of the work opens with the statement that it is a "Book of Medicines." From

this it derives its name, which is somewhat misleading since it seems to imply that the work is merely a collection of prescriptions. In fact it is a rambling encyclopedia, covering almost every aspect of ancient medicine, other than surgery. As such it fits in with the general Byzantine encyclopedic tradition of this period, and it certainly follows the great ancient and medieval tradition of medical encyclopedias in Greek, Latin, Sanskrit, Chinese, Syriac and Arabic, which were always based on much earlier material.

The Introduction consists of a legendary account of the beginnings of medicine, taken in part from the *Book of Jubilees*,<sup>34</sup> one of the group of Biblical pseudepigrapha which contains the story of Noah. It claims that the work which it introduces represents a version of a "Book of Medicines" which was written down by Noah after the Flood from the words of Raphael, God's healing angel, and was then given by Noah to his son Shem. Thus medicine acquired Semitic ancestry, but it was then copied by "ancient sages" throughout the world, who carried on the tradition. Among these the "sages" of India, Greece, Egypt and Mesopotamia are specifically mentioned, but only four of them are named: Hippocrates, "Asaf the Jew," Dioscorides, and Galen. Apart from Asaf, of whom we know nothing, these were probably the three names in Greek medicine most familiar to medieval readers. If they have intentionally been placed in chronological order, it may denote that Asaf was supposed to have lived between the time of "Hippocrates" and that of Dioscorides, that is, at some period between the fifth century B.C. and the first century A.D. Yet no historical physician, Jewish or other, is known by this name.

Although most of the work claims to represent the medical teachings of Asaf as based, like those of the other sages, on the *Book of Medicines*, some of the sections are presented in the name of an equally unknown Yoḥanan. In both cases the teachings are reported as though they had been set down by a hearer, possibly a pupil. No clue as to its date of composition has yet been found in the contents, nor even in scribal additions. Moreover, despite assertions that the work was mentioned by others at much earlier dates,<sup>35</sup> I have so far been

<sup>30</sup> Castelli, *Il commento* (n. 25 above), 10–19; Muntner, *R. Shabtai* (n. 27 above), I, 24–38, esp. 25–35. This part of the work is discussed and partly quoted by Sharf, *Donnolo* (n. 12 above), chaps. 4 and 5.

<sup>31</sup> Flusser, *Josippon* (n. 17 above), II, 81.

<sup>32</sup> See Sharf, *Donnolo* (n. 12 above), 96–97. Text: Muntner, *R. Shabtai* (n. 27 above), I, 109–44.

<sup>33</sup> The only extract published which has been critically edited is L. Lieber, "The Covenant Which Asaf . . . and Yoḥanan . . . Made with Their Pupils," *Muntner Memorial Volume*, ed. J. O. Liebowitz (Jerusalem, 1983) 83–87 (Hebrew and English). Other extracts: Hebrew: S. Muntner, "Asaph Harofe, Sefer Harefuoth," *Koroth*, 3 (1965), 396–422, and most subsequent issues till 6 (1972), 28–51; A. Melzer, *Asaph the Physician—The Man and His Book* (Ann Arbor, 1980), 93–251; English: A. Bar-Sela and H. E. Hoff, "Asaf on Anatomy and Physiology," *JHM*, 20 (1965), 358–89; Hebrew and English: S. Pines, "The Oath of Asaph the Physician," *Proceedings of the Israel Academy of Sciences and Humanities*, 5 (1975), 224–26 and 258–59.

<sup>34</sup> *The Apocrypha and Pseudepigrapha of the Old Testament*, ed. R. H. Charles, II, *Pseudepigrapha* (Oxford, 1964), 27–28, "The Book of Jubilees," X, 1–16.

<sup>35</sup> L. Venetianer, *Asaf Judaëus, der älteste medizinische Schriftsteller in hebraeischer Sprache*, 3 pts. (Budapest, 1915–17), Part I, 26–39.

unable to corroborate any indubitable reference before about 1200.<sup>36</sup>

Greater or lesser parts of the book have now been found in eighteen manuscripts, mainly from European libraries,<sup>37</sup> the longest extending to some 350 folios. None are dated and few possess the name of the copyist. However, a number of them have recently undergone expert paleographical examination, and of these the earliest seems to date from the twelfth or the early thirteenth century.<sup>38</sup> Most appear to be of European origin, from the Mediterranean area. They vary greatly in the extent and order of their subject matter, and none possesses any table of contents. Moreover, unlike most other encyclopedic works, they lack any formal bibliographical division into books, chapters and so on, so that it is practically impossible to determine the true extent of the work, even in its most complete form. It no doubt appeared in many versions, some of which may have grown by accretion, while others were abridged.

The book as we have it contains at least three types of material. Items which appear to be original, or whose source has yet to be discovered, are found within the main body of the text. They seem largely to have been composed at the time of the main compilation, although they are undoubtedly based on much older material. Interspersed with them, however, are paraphrased abridgments of easily-identifiable Greek works, such as the Hippocratic *Aphorisms* and the *Materia medica* of Dioscorides. Finally, there are the clinical sections, on diagnosis and treatment, including various collections of prescriptions, much of which may have been added later.

The medical concepts expressed throughout the work are basically Greek and Hippocratic in origin. However, the more original parts of this work, unlike the purely medical writings of Donnolo, contain a large amount of Biblical analogy, some of which, as we shall see, never rises to the surface. As far as I know, the *Book of Medicines* is unique

among Jewish, Christian or Muslim<sup>39</sup> medical works in thus incorporating theological ideas.

As hinted in its Introduction, the book also shows traces of ancient Egyptian, Indian and Syriac elements, while Persian and occasional Arabic influences vary greatly with the different manuscripts. On the whole, however, Arabic medicine plays little or no part in the work, and is mainly expressed in a few technical terms, which may have been added later. Perhaps this accounts for the relative lack of Galenic concepts, while the preponderance of Hippocratic material is a sign that European influence predominates. In any case, a remarkable feature is the virtual absence of astrological material or references to magical practices.<sup>40</sup>

The work differs from most Greek encyclopedias of medicine, and resembles the Arabic works, in its attention to anatomy and to the ancient equivalent of physiology, including embryology. Yet Arabic anatomy is almost entirely Galenic. In the Hebrew work the section on anatomy proper limits itself to the constituent parts of the "members" (*evarim*) which, by ancient Hebrew definition<sup>41</sup> are those parts of the body which contain bones and "vessels" (*gidim*)<sup>42</sup> and are covered by flesh. The internal organs are described in a separate section, and mainly from the point of view of their func-

<sup>39</sup>Excluding, of course, the works on "Prophetic medicine" mentioned above.

<sup>40</sup>In one section the signs of the zodiac are named for each month; a handful of prescriptions utilize magic, but these are almost certainly later additions to the original collections of recipes.

<sup>41</sup>*BT* Hullin 128b and *Tosefta*, ed. M. S. Zuckerman (Pasewalk, 1877–82), Ohalot 1, 7 (Hebrew), cf. Ezekiel 37:6; as is Job 10:11.

<sup>42</sup>An example of the pseudo-archaic language found in the *Book of Medicines* is the unqualified use of the entirely non-specific anatomical term *gid* (plural: *gidim*) throughout the work. As in the Bible (Ezekiel 37:6; Job 10:11) it may indicate any elongated, but not necessarily hollow, structure in the body, including vessels of all kinds, nerves, sinews, tendons and, when qualified, even the penis. As such it seems to correspond with the ancient Egyptian term *mt* (see H. Grapow, *Grundriss der Medizin der alten Aegypter, I. Anatomie und Physiologie* [Berlin, 1954], 20 and 72), and perhaps with the Akkadian *šer'ānu* (see A. L. Oppenheim, "On the Observation of the Pulse in Mesopotamian Medicine," *Orientalia*, 31 [1962], 27–33). However, in the context discussed here, which is certainly derived from Ezek. 37:6, the term probably refers only to the most essential of these elements, the blood vessels and nerves. In the Mishnah and Talmud a more specific term, *vrid*, corresponding with the Greek *phleps* (see I. M. Lonie, *The Hippocratic Treatises "On generation,"* . . . [Berlin and New York, 1981], 105), is used without qualification to denote the blood vessels in general. In Job 30:17 the term *oreq* in its context seems to indicate a "vessel" which "does not rest," and hence perhaps an artery. The same term, when qualified as "pulsating," is the commonest way of differentiating an artery from a vein in medieval Hebrew (and Arabic) medical works, but the terms *vrid* and *gid* are also used in this fashion.

<sup>36</sup>*The Commentary of Rabbi David Kimhi on Hosea*, ed. H. Cohen (New York, 1929), chap. 14, 8; pp. 113–114.

<sup>37</sup>The main manuscripts are (Hebrew) Bodleian Cat. Neubauer 2138; Munich Staatsbibliothek 231; Florence Laurenziana Plut. 88.37; British Museum Or. 12252.

<sup>38</sup>Bodl. 2138. For this I am most grateful to Professor I. O. Lehman of the Hebrew Union College, Cincinnati, Dr. Colette Sirat of Paris, and Professor M. Beit-Arié of Jerusalem. See also J. Shatzmiller, "Doctors and Medical Practices in Germany," *Proc. American Acad. for Jewish Research*, 50 (1983), 149–64. Munich 231, which was hitherto generally thought to be the oldest, is probably a sixteenth-century copy.

tion. This is probably the oldest arrangement of a specifically anatomical text, and traces of it are even found in the Galenic scheme regarding the subject matter and order of anatomical teaching.<sup>43</sup> In all other respects, however, Galenic anatomy reflects an approach differing entirely from that of the *Book of Medicines*. Though ostensibly human, it was based on observations obtained from the dissection of animals for anatomical purposes, whereby the tissues and organs were systematically exposed, layer by layer, in order to reveal their relationships. The anatomical and "physiological" sections of the Hebrew work, on the other hand, reflect a view of animal anatomy familiar to the ordinary man in former times, when nearly everyone took some part in the slaughter of animals for food. Immediately the animal was killed, the organs were removed from the body in order to preserve the flesh from decay. Hence the anatomy of the "members"—of the bony parts covered by vessels and flesh—was that of the limbs and of the empty cadaver. Since the organs were rapidly removed, their relationship to one another, and to the cadaver itself, remained vague, and this was even mirrored, as has been seen, in works based essentially on anatomical dissection.

Hence this was the aspect of the body observed after slaughter according to the Jewish dietary laws,<sup>44</sup> methods which had been practiced and perfected for centuries before they were first written down in the Mishnah in the second century A.D. In the Talmud we also find instructions for examining the cadaver and organs—to ensure that the meat is fit for consumption—and these were continually supplemented and revised. Such procedures must clearly have resulted in a profound knowledge of animal anatomy, even if it were never recorded as such.

At first sight the sections of the *Book of Medicines* dealing with anatomy, "physiology" and "pathology" seem to be a confused mass of Greek and Jewish concepts. Yet, as we shall see, there is not only method in this apparent madness, there are also

amazing flashes of insight. My first example of Greek-Jewish interaction in this work is probably the most interesting of all, because it has produced such a remarkable offspring. It is the account of the blood vessels, which forms part of the anatomical section.<sup>45</sup> Its highly unusual nature was first recognised in 1933 by Dr. I. Simon of Paris;<sup>46</sup> but his finding has been almost totally ignored. Since it is stated in the description that the blood "goes around" the body and then "returns to the heart," he considered this to be an account of the actual circulation of the blood. The author, according to Simon, was Asaf, an unknown Jewish physician from around the seventh century, who had thus forestalled William Harvey (1578–1657)<sup>47</sup> by some nine hundred years—although Simon felt that Asaf could not have appreciated the true significance of his discovery.

However, Simon's interpretation of this section of the work is based on one manuscript alone. Still more important, he does not identify the individual vessels in the description, and so cannot justify his conclusions on an anatomical basis. It seems to me, therefore, that the whole matter warrants entirely fresh consideration.<sup>48</sup>

The account opens by stating that it concerns "those vessels (*gidim*)<sup>49</sup> which convey the soul in the blood to all the body." It then describes how "the abundance of the blood" flows from vessels in the neck down to the heart. From there the blood "goes around" the body to the different parts, then "returns to the heart," and leaves it once again. It is not said, however, to proceed to the lungs, which receive no mention at all. Nor is it clear whether the blood actually returns from the limbs, or is partly or wholly absorbed there.

Since the archaic and non-specific Biblical term

<sup>45</sup> For trans. see Bar-Sela and Hoff, "Asaf on Anatomy" (note 33 above).

<sup>46</sup> I. Simon, *Asaph Ha-Iehoudi* (Paris, 1933), 41 and 45.

<sup>47</sup> Harvey's account of the circulation was first published in 1628, as *De motu cordis et sanguinis*. See W. Harvey, *An Anatomical Disputation concerning the Movement of the Heart and Blood in Living Creatures*, trans. G. Whitteridge (Oxford, 1976), (hereafter: Harvey, *De motu cordis*, Whitteridge). On his discovery see: W. Pagel, *William Harvey's Biological Ideas* (Basel, New York, 1967), hereafter: Pagel, *WHBI*; G. Whitteridge, *William Harvey and the Circulation of the Blood* (London, New York, 1971); *William Harvey and His Age*, ed. J. J. Bylebyl (Baltimore, 1979).

<sup>48</sup> I shall be publishing a special study of this Hebrew account of the vessels, which will include the text, a translation, a full anatomical interpretation, and a comparison with Harvey's findings.

<sup>49</sup> See note 42 above. In this account the term is translated as "vessels" since here, when unqualified, it clearly denotes the blood vessels alone.

<sup>43</sup> See E. Lieber, "Galen in Hebrew: the Transmission of Galen's Works in the Mediaeval Islamic World," in Nutton, ed., *Galen: Problems*, 167–86, esp. 172–73.

<sup>44</sup> See Mishnah Tractate Hullin. This tradition of slaughter is said to be based on the commandment at Sinai (Deuteronomy 12:21), "Thou shalt kill . . . as I have commanded thee," and on the prohibition of eating blood found in Genesis 9:4 and Leviticus 17:10–14. . For summaries of these laws and procedures see Julius Preuss' *Biblical and Talmudic Medicine*, trans. F. Rosner (New York, 1978), 501–6 and 103; *Encyclopaedia Judaica*, vol. 14 (Jerusalem, 1971), s.v. *Shehitah*, cols. 1337–44.

*gid* is used to denote all the vessels, and as none of them are actually named, it would at first seem impossible to identify the vessels concerned. As an anatomical description it thus seems primitive indeed, an impression which probably accounts for its totally unjustified neglect. Yet the difficulty in recognizing what is actually described seems mainly to lie in the fact that it is presented in a very different form from other known works of this kind, ancient or medieval. These are generally based on systematic dissection of the vessels, in animals or man, for anatomical purposes, or else describe the vessels as a guide to bloodletting procedures. However, this purely medical Hebrew account appears to be founded on a knowledge of the cadaver of animals slaughtered for food, and hence includes only those vessels which remain in the body after the organs have been removed. Once this unusual presentation is recognized, each of the vessels described can be identified in modern anatomical terms. This is possible, despite the lack of any guiding nomenclature, since, surprisingly enough, the direction of flow in each vessel is, with one exception, correctly described. On account of this hemodynamic approach, the arteries and veins can be distinguished from one another, and both types of vessel are obviously thought to contain blood.<sup>50</sup> The blood is thus said to be repeatedly carried to the heart by vessels essentially corresponding with the veins and it flows from the heart to the periphery in vessels identifiable as the aorta and its branches.

Yet this is by no means a layman's account, for it is certainly influenced in part by some of the most ancient Greek descriptions of the vessels. In its phraseology and in purely anatomical details it shows affinities with that of Diogenes of Apollonia, which dates from the fifth century B.C. and is probably the oldest known systematic account of the vessels.<sup>51</sup> In many respects it also resembles certain descriptions found in the Hippocratic work *Bones*,<sup>52</sup> particularly those which themselves resemble the work of Diogenes.

It has of course long been claimed that certain Hippocratic writings already showed an awareness

of the circular motion of the blood, although this view has also been hotly disputed.<sup>53</sup> However, the Greek anatomical accounts are more or less static descriptions of the vessels, and those few Hippocratic treatises which actually allude to the motion of the blood do not so much as hint at a circulatory system beginning and ending in the heart.

The central function of the heart in relation to the vascular system seems to have been recognized by the ancient Egyptians,<sup>54</sup> and it was firmly established by Plato and Aristotle,<sup>55</sup> as part of the belief in the general primacy of the heart in the body. The two latter, however, likened the vessels to a centrifugal system of irrigation canals.<sup>56</sup> These carried the blood from a central source, the heart, to the periphery of the body. Since the blood, with all its contents, was thought to be wholly absorbed by the tissues—like the water in an irrigation canal—there could be no question of a circulation. This basic idea of the function of the vessels was to be adopted by Galen,<sup>57</sup> and by almost all physicians up to the time of Harvey and even beyond. However, like Galen they generally rejected the idea of the centrality of the heart, claiming that this organ played only a minor role in the cardiovascular system. The liver was the main point of distribution of the blood (with its “nutriment”) to the body, via the veins, and hence the greater part of the blood was thought to bypass the heart.<sup>58</sup> The heart “gave rise” to the arteries alone, whose task it was to bring “spirit” (*pneuma*) to the body.<sup>59</sup>

Yet, from very early times Platonic and, above all, Aristotelian ideas greatly influenced both medical and non-medical concepts of the cardiovascular system. In the sixteenth century in particular, the widespread adoption of these theories in philosophical and theological works resulted in a general diffusion of the belief in the central position

<sup>53</sup> The polemic has been superbly presented in Harris, *Heart* 29–96. See also Lonie, “On Generation” (n. 42 above), 87–97.

<sup>54</sup> *The Papyrus Ebers*, trans. B. Ebbell (Copenhagen, 1937), XCIX and C, 114–15, 117.

<sup>55</sup> Plato, *Timaios* 70 A–B; Harris, *Heart*, 118–21. Aristotle, *Parts of Animals* III, 4; 665b–666a. Harris, *Heart*, 122.

<sup>56</sup> Plato, *Timaios* 79A; Aristotle, *Parts of Animals* III, 5; 668a.

<sup>57</sup> Galen, *Natural Faculties* III, xv (trans. Brock, 324–27).

<sup>58</sup> According to Galen most of the blood in the vena cava in the chest went straight up to the throat. See Galen, *Parts* VI, 4 (trans. May, I, 286), and Galen, *Hippocrates–Plato* VI, 5, 2 (ed. De Lacy, II, 389). The heart proper was thought to consist only of the ventricles.

<sup>59</sup> On Galen's ideas on the cardiovascular system, which are scattered throughout his works, see A. R. Hall, “Studies on the History of the Cardiovascular System,” *BHM*, 34 (1960), 391–413; Harris, *Heart*, 267–396; and the excellent diagram in Scarborough, *Medicine*, fig. 13, p. 118.

<sup>50</sup> As suggested by Aristotle (*Parts of Animals* III, 5; 667b–668a), and demonstrated by Galen (*An in arteriis natura sanguis continetur*, chap. 2 [ed. Kühn, IV, 707]), who was, however, so inconsistent about this, that most of his followers adopted the view that the veins contained much blood and a little spirit, while the converse held for the arteries. That both types of vessel are full of blood is fundamental for any concept of the circulation.

<sup>51</sup> Aristotle, *Historia animalium* III, 2; 511b, 31–512b, 11.

<sup>52</sup> Hippocrates (ed. Littré), IX, 168–97.

of the heart, which led in its turn to various theoretical concepts of circular movement within the cardiovascular system. It is possible that these ancient Greek theories and their later developments affected our Hebrew account directly or indirectly, just as much later they influenced Harvey.<sup>60</sup> There is certainly no doubt that Harvey based his arguments directly on Aristotelian logic, and he freely acknowledges his debt to Aristotle for many of his philosophical and medical ideas.<sup>61</sup> These included a macrocosmic parallel to the circulation of the blood, based on Aristotle's descriptions of cosmological cycles,<sup>62</sup> and it is interesting to note that the Bible, which so obviously influenced the *Book of Medicines* in general, also describes such a cycle in Ecclesiastes 1:4–7.

Yet, despite its ancient Greek echoes, the *Book of Medicines* seems to present a very different view of the cardiovascular system, remote even from neo-Galenic ideas. Crude as it appears, we have here an account of the continuous flow of the blood around the body for, since the blood leaves the heart by one route and returns to it by another, there can be no question of an ebb-and-flow movement. Although here there is no actual allusion to movement in a circle, none of these elements of a true circulation is found, as far as I know, in any Greek text, nor in any other work before the mid-sixteenth century.

According to the modern, physiological definition of the circulation of the blood, all the blood is continuously pumped around the body through all the vessels, passing through the heart on the way to and from the lungs. In our Hebrew account there are two possible gaps in the circuit. As has been seen, it is possible that the blood was thought to be absorbed in the limbs and hence did not return from there to the heart. Secondly, the lungs are not mentioned at all.<sup>63</sup> Yet if the blood constantly returns to the heart, how does it flow from the veins

and the right side of the heart to the left side of the heart and the arteries, without traversing the lungs? The Hebrew account provides no clue at all but, provided that the question were ever considered, it is possible that Galenic views were adopted, so that this route was not anatomically required. According to Galen the blood could pass from the veins to the arteries directly through anastomoses between them. It also flowed from the right side of the heart to the left through channels in the interventricular septum.<sup>64</sup> However, in view of the non-Galenic spirit of this account, it is more likely that the shunt was thought to be effected in a manner which Aristotle seems to describe.<sup>65</sup>

The first known description of the course of the blood from the right side of the heart to the left via the lungs was written in the thirteenth century by Ibn an-Nafīs, a Muslim physician.<sup>66</sup> It was rediscovered in Europe three hundred years later, perhaps with the aid of a translation of this Arabic account.<sup>67</sup> Yet to these pioneers this was no more than a pulmonary transit, with no hint whatsoever of circular movement. However, the concept of this vascular pathway through the lungs, linking the veins with the arteries, clearly cast doubt on Galen's hypothesis that the blood could pass through the interventricular septum of the heart. Hence, although fully accepted by Harvey, it was rejected by others during and after his time. The function of the lungs in oxygenating the blood was of course known no more to Harvey than to the author of our Hebrew account. Yet some of Galen's varied notions of the *pneuma* or "spirit," derived from the air via the lungs, came remarkably close to the mark,<sup>68</sup> and these were the theories adopted by most of Galen's successors, and by Harvey among them.

<sup>60</sup> See W. Pagel, *WHBI*, and *New Light on William Harvey* (Basel, c. 1976), both *passim*; C. Webster, "William Harvey and the Crisis of Medicine in Jacobean England," in Bylebyl, *Harvey and His Age* (n. 47 above), 1–27, esp. 15 ff.

<sup>61</sup> See H. Ratner, "William Harvey, M.D.: Modern or Ancient Scientist?," *The Thomist*, 24 (1961), 175–208; J. S. Wilkie, "Harvey's Immediate Debt to Aristotle and Galen," *History of Science*, 4 (1965), 103–24.

<sup>62</sup> Harvey, *De motu cordis*, chap. 8 (Whitteridge [n. 47 above], 75–76); cf. Aristotle, *Meteorologica* I, 9, 346b–347a.

<sup>63</sup> Interestingly enough, the identical concept of a partly closed circuit, confined to the trunk—although physiologically impossible—was suggested by Harvey's contemporary, Jean Riolan, the Professor of Anatomy in Paris, to counter Harvey's idea of the circulation. He claimed, moreover, that the blood passed through the interventricular septum of the heart, and only flowed

through the lungs under exceptional circumstances. J. Riolan, *A Sure Guide to Physick and Chyrurgery*, Englished N. Culpeper and W. R. (London, 1657) (= *Encheiridium anatomicum*), 57 and 108.

<sup>64</sup> Galen, *Natural Faculties* III, xv (Brock, 321).

<sup>65</sup> This is based on my personal interpretation of Aristotle, *Historia animalium* III, 3, 513b, 1–33, which will be presented in the paper referred to in n. 48 above.

<sup>66</sup> See M. Meyerhof, "Ibn An-Nafīs (XIIIth cent.) and His Theory of the Lesser Circulation," *Isis*, 23 (1935), 100–120; J. Schacht, "Ibn al-Nafīs, Servetus and Colombo," *Al-Andalus*, 22 (1957), 317–36.

<sup>67</sup> See Meyerhof, *ibid.*, and Schacht, *ibid.* The Arabic account is said to have been translated into Latin in the sixteenth century, but this version has never been found, see C. D. O'Malley, "A Latin Translation of Ibn Nafīs (1547) Related to the Problem of the Circulation of the Blood," *JHM* 12 (1957), 248–53. Plagiarism on the part of Servetus is refuted by O. Temkin, "Was Servetus Influenced by Ibn an-Nafīs?," *BHM*, 8 (1940), 731–34.

<sup>68</sup> As rightly suggested by Harris, *Heart*, 338.

However, not until Harvey was the pulmonary transit conceived of as part of the general movement of the blood around the body.<sup>69</sup> Yet to Galen, and to those who for centuries followed his lead in this matter, a circulation would have been “unnecessary” on purely physiological grounds, and hence could not be discovered.

In the Hebrew description, however, the blood as a whole serves to convey the soul, rather than the spirit, around the body. Since the soul, unlike the spirit, does not depend directly on the lungs, the latter are of no special importance in the context of the vascular system. Perhaps that is why, like some other organs, such as the alimentary tract, they receive no mention at all, even though they may well have been thought to take part in the circular motion of the blood. Nor is their absence surprising in such a description, based on animal slaughter, in which, as we have seen, the vascular connections of the organs in any case tend to be vague.

This Hebrew work thus essentially provides an account of the progress of the soul in the blood around the body, from the hemodynamic point of view, as it proclaims in its opening phrases, in which an “abundance” (*šefa*) of the blood is said to enter the heart via the veins. This is an extraordinary declaration: it is diametrically opposed to Galenic physiology, which on principle claims that the mass of the blood never enters the heart. It is even more remarkable that the identical observation regarding the “abundance” (*copia*) of the blood entering the heart, and its subsequent development along purely hemodynamic lines, constituted, as Harvey tells us himself, the discovery of the circulation of the blood.<sup>70</sup>

It is not generally realized, however, that to arrive at this triumphant conclusion Harvey had first to close the anatomical gap left by Galen and almost all his successors. In a work published earlier, the *Lectures on Anatomy*, Harvey had already reverted to the Aristotelian idea that the vena cava “begins” in the heart rather than in the liver. Hence,

<sup>69</sup> M. Neuburger, “Zur Entdeckungsgeschichte des Lungenkreislaufes,” *Arch. f. Gesch. Med.* 23 (1930), 7–9, followed by Meyerhof, “Ibn An-Nafis,” and by Pagel, *WHBI* (n. 47 above), 51 and 136, have stressed the essential fact that the so-called pulmonary circulation is in fact no circulation on its own, since it does not begin and end in the same place. It only forms part of the general circulation of the body as a whole.

<sup>70</sup> See Harvey, *De motu cordis*, chaps. 8 and 10 (Whitteridge [n. 47 above], 75 and 85). But see Pagel’s comments, *WHBI* (n. 47 above), 224 on the similar observation by Vesalius in 1543, and its possible influence on Harvey.

according to Harveian hemodynamics, all the blood in the vena cava would have to enter the heart—in total opposition to the Galenic point of view.<sup>71</sup>

In *De motu cordis*, having announced his discovery, Harvey then justifies it on teleological grounds: blood cooled in the extremities is forced back to the heart, there to “seek again both heat and spirit.”<sup>72</sup> Yet in a work published later, *On the Generation of Animals*, Harvey plays down the importance of the spirit and even downgrades the heart, in favor of the predominance of the blood, containing the soul. “Spirit” is now merely the “instrument” of the soul and, as he rightly maintains, the only purpose of the heart is to “receive this blood . . . and drive it forth again into every part throughout the whole body.”<sup>73</sup> The concept of the preeminence of the soul in the blood, and of its distribution throughout the body, was no product of Galenic physiology. For Harvey, as for the Hebrew account, it sprang from “the Scriptures”: from the idea expressed in Leviticus 17:11, that “the soul of the flesh is in the blood.”<sup>74</sup>

And this same Biblical verse serves to explain the hemodynamic approach of our Hebrew account, some seven hundred years before Harvey. For Leviticus 17:11 forms part of the Biblical laws (Genesis 9:3–4 and Leviticus 17:10–14) which prohibit the eating of blood in general, including the blood in the flesh. However, Leviticus 17:13 allows flesh to be eaten if the blood has been poured out, and this proviso constitutes the basis of Jewish methods of slaughtering animals for food. These were devised and perfected over the millennia, with the aim of rapidly killing the animal, exsanguinating it as fast and completely as possible and yet, as already stated

<sup>71</sup> *The Anatomical Lectures of William Harvey*, ed. G. Whitteridge (Edinburgh, London, 1964), 75r, 258–59. For Galen’s views see n. 58 above.

<sup>72</sup> Harvey, *De motu cordis*, chap. 15 (Whitteridge [n. 47 above], 109).

<sup>73</sup> *William Harvey’s Disputations Touching the Generation of Animals*, trans. G. Whitteridge (Oxford, 1981), chap. 51, pp. 245–46 and chap. 71, p. 382, and see C. Webster, “Harvey. *De generatione*,” *British Journal for the History of Science*, 3 (1967), 262–74.

<sup>74</sup> Harvey, *Generation of Animals* (ed. Whitteridge), chap. 51, p. 243; chap. 52, p. 257. Here Harvey, however, uses the term “life” (*vita*), which does not strictly correspond with the Hebrew *nefesh* (soul), used in the Bible (and in the Hebrew description of the blood vessels), nor with the Vulgate (*anima*) and Septuagint (*psyche*). “Life” is found, however, in the King James English version, which first appeared in 1611, when Harvey was a young man. The same applies to Genesis 9:4, which is usually translated as Leviticus 17:4, although the latter text here is exceedingly corrupt. On this mis-translation in another context, see J. O. Liebowitz, “Annotation on Fulton’s *Servetus*,” *JHM*, 10 (1955), 232–38.

by Maimonides in the twelfth century,<sup>75</sup> inflicting on it the minimum suffering and pain. This was basically achieved by very rapidly severing the common carotid arteries in the neck. The animal lost consciousness almost immediately, and the blood from the whole of the body then drained off through these vessels.

Exact details regarding these slaughtering procedures, the subsequent obligatory examination of the carcass and the actual excision of certain vessels from the flesh,<sup>76</sup> were handed down over the generations, and were known to the public at large. They were written down and openly discussed by the rabbis, who were ultimately responsible for adherence to the rules, and who often knew something of medicine. The ritualization of slaughter led to its systematization, but it did not prevent the development of its techniques. Thus, by the Middle Ages the experience accumulated over the ages had produced such a grasp not only of vascular anatomy but, above all, of hemodynamics, that when appended, as here, to medical knowledge, it was possible to presage the circulation of the blood.

In this respect Harvey's views are still closer to our Hebrew account, since he supports his case for the Biblical concept of the soul in the blood with evidence along very similar lines: "I have proved by the frequent dissection of living animals . . . that when the animal was already dying and no longer breathing, the heart continued to pulsate for a while and kept some life in itself."<sup>77</sup> This constitutes the hemodynamic basis of the Jewish method of slaughter, whereby maximum exsanguination occurs in the minimum time. Moreover, already in *De motu cordis*, together with experimental findings confirming his theory of the circulation of the blood, Harvey had presented empirical observations regarding the evacuation of the blood in animals slaughtered under different conditions, which, as he noted, were well known to butchers.<sup>78</sup> Yet, apart from the author of the Hebrew account, their significance does not seem to have been appreciated by the medical world, other than Harvey. And Harvey alone verified this empirical knowledge by scientific experiment.

Thus, while these remarkable resemblances be-

tween the two concepts of the vascular system are not coincidental, there is no reason whatsoever to believe that Harvey knew, directly or indirectly, of this Hebrew account. Both are based on a similar approach and on similar sources, which were neglected by most other physicians. Apart from the customary Greek background, both authors applied their medical knowledge to the Bible, on the one hand, and to empirical findings on the other.

Yet, though this Hebrew account presages Harvey's discovery, it does not forestall it. It presents only a very crude scheme of the cardiovascular system, omitting the lungs and lacking any description of the actual workings of the heart. Many centuries before Harvey, however, it already offers some astonishing insights. Like so much of the *Book of Medicines*, it appears to be the fruit of a blend of Jewish and Greek concepts, tempered by the genius of the anonymous author.

In the "physiological" sections of the *Book of Medicines* the body is said to be formed from the four humors and four qualities—hot, cold, wet, and dry—and the state of health or disease depends on their balance, or on the condition of the "spirit." These are common medieval concepts, generally taken from the writings of Galen, but ultimately based on Hippocratic works, such as the *Nature of Man*. In the *Book of Medicines*, however, such Greek "physiological" theories form a pastiche with Jewish ideas, taken mainly from the Bible. Yet, in addition to this open relationship, there is sometimes also a hidden dimension. This is an esoteric device for "those in the know"; but it must be stressed that it holds no mystical significance whatsoever. To be "in the know" one must merely recognize certain key words or phrases in the text as coming from the Bible, and then be able to identify the source. The verse thus referred to, and often its context as well, serves as a kind of scholarly note, deepening one's understanding of the text. This is an aspect of a very ancient literary practice, used in many languages, and known as *cento*, or as the "rhetorical style," and in Hebrew as *melitsah*.<sup>79</sup> But while in the normal way *melitsah* is employed in a text which is of Jewish significance alone, here it is

<sup>75</sup> Moses Maimonides, *The Guide of the Perplexed* III, 48, trans. S. Pines (Chicago, 1963), 599.

<sup>76</sup> See note 44 above.

<sup>77</sup> Harvey, *De generatione*, chap. 51 (Whitteridge [n. 73 above], 243).

<sup>78</sup> Harvey, *De motu cordis*, chap. 9 (Whitteridge [n. 47 above], 81–83).

<sup>79</sup> This is also known as the "mosaic style," "in which minute fragments of the ancient texts are combined into new wholes," but often, as here and in the Bible, it also contains another very important element—play upon words in every conceivable form. See C. Rabin (to whom I am indebted for the reference), "The Ancient in the Modern," in *Language and Texts*, ed. H. H. Paper (Ann Arbor, 1975), 149–79. For Greek and Latin see *OCD*, s.v. *cento* ([Oxford, 1970], pp. 220–21).

intended to supplement the Biblical parallels to pagan Greek concepts.

The possible presence of this complex literary form must be taken into account throughout the first part of the work, but here I shall provide only a single example. This concerns the interaction of Greek and Jewish concepts of "spirit," in its role as a kind of physiological entity. In such a context the Greek term *pneuma* which, since about the fourth century B.C., was considered as essential to life,<sup>80</sup> would be translated as "spirit" or "breath." It can also mean "wind," like the Hebrew term *ruah*, which similarly denotes "spirit" but does not mean "breath," for which there is a separate term. According to the *Book of Medicines*, the *ruah* (spirit) in the body originates in the four winds (*ruhot*, plural of *ruah*). There is no doubt about this latter translation, since in this particular case the *ruhot* are specifically said to be natural forces. Yet we cannot understand why the spirit should arise from "the four winds," unless we realize that the phrase simply serves as a clue for the reader, a pointer to a specific Biblical verse concerning the winds and the spirit. The allusion can only be to the four winds mentioned in Ezekiel's vision of the resurrection of the slain in the valley of dry bones (Ezekiel 37:1–14). Here the prophet proclaims: "From the four winds come, O spirit, and blow upon these slain that they may live" (Ezekiel 37:9).<sup>81</sup>

The recall of this verse and its context thus demonstrates the existence of a Biblical concept of the spirit as essential to life ("And I shall put my spirit into you and you shall live"), which resembles the Greek view mentioned above, but is not identical with it. It is taken from the account of the resurrection of man, since the concept appears here, but not in the far better-known story of the creation of man found in Genesis 2:7. For in Genesis God created the first man by blowing into him breath (*nešamah*), so that he "became a living soul." Ezekiel, on the other hand, speaks of those who have lived but were slain. God first lays on their dry bones the "vessels" (*gidim*) and flesh, and covers them with skin (verse 6).<sup>82</sup> Yet the bodies still need spirit (*ruah*)

for their actual revival. Since God initiated the first creation with the breath, but not spirit, he fittingly allots the task of blowing in the spirit to the winds (*ruhot*).

This interpretation—that breath was required to create a "living soul," whereas spirit is needed for the body's resurrection—may underlie Paul's distinction between the "natural body" and the "spiritual body," the former being that of the first man, a "living soul," while the last man is "a quickening spirit" (I Corinthians 15:35–45). However, Paul was no physician, whereas in the *Book of Medicines* "spirit" is used in a physiological sense, as an actual component of the body, essential to life. One may therefore postulate that the reference to Ezekiel has still wider medical connotations. Since the first man did not pass through the fetal stage, his breathing had to be initiated by God's own breath. From this the vital spirit was obtained, for it was thought to be normally acquired from the breath. In the act of dying, however, the slain lost their spirit (cf. Eccles. 12:17). The winds thus "blew in" the spirit of life which stimulated both breathing and the heart, and the bodies were revived. And such a spirit moving the heart is actually mentioned in the section of the *Book of Medicines* describing the anatomy of the heart.

These verses from Ezekiel seem also to have influenced Donnolo's theological commentary, and it is just this part of the commentary which, as has been noted above, was incorporated in the *Book of Yosippon*. However, other parts of this same section of Donnolo's work are clearly based on the *Book of Medicines*, although that work is never mentioned by name. It is quite possible that Donnolo was aware of the hidden reference it contains to the book of Ezekiel, in which case the extract from his commentary found in the *Yosippon* would ultimately be derived from the *Book of Medicines*.

An entirely different aspect of Greek-Jewish interaction is found in the long medical oath, said to have been sworn to Asaf and to Yohanan by their pupils.<sup>83</sup> While this shows many affinities with the Hippocratic Oath, it is not taken from it directly. It also resembles, for example, God's covenant with the people of Israel in Deuteronomy and, like the Hippocratic Oath itself, it contains parallels with many other non-medical documents of this type. From the literary point of view it constitutes a remarkable mosaic of Biblical phrases.

The paraphrased version of the Hippocratic *Aphorisms* is almost complete, and may have been

<sup>80</sup> See Harris, *Heart*, 106 ff.

<sup>81</sup> Unfortunately in the English Bible the term "breath" rather than "spirit" is used for the Hebrew *ruah* in this verse and throughout the passage, wherever it is associated with the human body. Thus the Hebrew distinction between "spirit" (*ruah*) and "breath" (*nešamah*) is lacking there, as in the Septuagint, where the Greek term *pneuma* is used. The term *nešamah* does not occur in this passage, but in Genesis 2:7, for example, the English Bible correctly translates it as "breath."

<sup>82</sup> See note 41 above on the "members" of the body which, as has been seen, are the only parts to be described in the purely anatomical sections of the *Book of Medicines*.

<sup>83</sup> See note 33 above.

composed directly from the Greek. It appears to be based on a Greek version which can be traced back to a group of manuscripts of the work which was known to Galen,<sup>84</sup> but was not used as the basis for his own commentary on this Hippocratic work. Being essentially a paraphrase, the Hebrew text obviously diverges somewhat from the original, but in many cases its arrangement and meaning are so much clearer that it may well be of value for purposes of textual criticism.

The Hebrew version of the *Materia medica* of Dioscorides is a paraphrase of a substantial part of the work, comprising about one-third of all the botanical items in the first four books. The order of these items corresponds roughly with that of the Greek non-alphabetical texts, but I have not yet been able to compare this version with those in Greek or other languages. Many of the plant names are given not only in Hebrew, but also (in Hebrew transcription) in Greek, Latin, and Syriac, and occasionally in Arabic or Persian. Some of these may well have been added later, but the Syriac names are so numerous that it has been suggested that the Hebrew version was taken from the Syriac translation of the work, which was made in the ninth century<sup>85</sup> but has since been lost.

The remainder of the *Book of Medicines* deals mainly with clinical medicine, and contains little original material, but endless prescriptions in various collections. Otherwise, treatment is mainly dietetic and Hippocratic in nature, and surgery is hardly mentioned at all. Byzantine and, in some manuscripts, perhaps Salernitan material may well be included, but a specifically Jewish element is practically absent from this part of the work.

Superficially, this Hebrew work bears some resemblance to an anonymous, undated Syriac medical encyclopedia, also known as the *Book of Medicines*. Yet it lacks the essentially Galenic content of the Syriac work<sup>86</sup> and, moreover, differs from it, and from the general Greco-Arabic encyclopedic tradition, in the form of its presentation. In this

respect it resembles only some of the oldest Indian medical encyclopedias. It must, however, be stressed that as far as its concepts are concerned, the Hebrew work shows few similarities with specifically Indian thought.

The ancient Indian medical encyclopedias constitute different recensions of the same basic material, which goes back to the first century A.D. or even before. In their present form, however, they date from many centuries later.<sup>87</sup> The two earliest, attributed to Caraka and named after Suśruta, respectively,<sup>88</sup> are those which structurally resemble the *Book of Medicines*. However, as far as can be judged from the few descriptions and extracts which have appeared in European languages, the greatest similarity is shown by a Tibetan medical encyclopedia, the *rGyud bzhi*. Though showing Chinese and other influences, it is probably based on a much older Indian medical work, from which it was adapted and translated around the eighth century.<sup>89</sup>

Like these Indian works, the *Book of Medicines* is presented as the teachings of an ancient sage—and one who is historically unknown. Like them, too, it harks back to the supernatural origins of medicine—in the one case emanating from God via Noah, and in the other case from the Indian gods. Each also provides a subsequent “history” of medicine, as well as a medical oath.<sup>90</sup> None of these features is present in any other known medical encyclopedia, of western or eastern origin.

I have tried to make out that the *Book of Medicines* aims to demonstrate the existence of a true Jewish medicine, that is, to convince the Jewish reader that the Jews, like the Greeks, possess medical roots. If this indeed be the case, didactic encyclopedias of this kind, covering almost all aspects of their own, indigenous medicine, would provide a highly suitable pattern for the work, even though the concepts expressed are entirely different in na-

<sup>84</sup> This Hebrew version contains a fragment, taken mainly from the Hippocratic work *Sevens*, which has been added on to the end of Book VI of the *Aphorisms*. It is found in only two of the extant Greek manuscripts of the work. See *Hippocrates* (ed. Littré) I, 401 ff. and *Hippocrates* (ed. and trans. Jones), IV, 217.

<sup>85</sup> I. Loew, *Die Flora der Juden*, 5 vols. in 4 (Vienna, 1824–34), IV, 167–69.

<sup>86</sup> E. A. Wallis Budge, ed., *Syrian Anatomy, Pathology and Therapeutics*, 2 vols. (London, 1913). According to C. Brockelmann's review of Wallis Budge, *ZDMG*, 68 (1914), 185–203, it is mainly a “Plagiat” of Galen's *De locis affectis*. For further Galenic citations see J. Schliefer, “Zum Syrischen Medizinbuch,” *Zeitschrift für Semiotik*, 4 (1926), 70–122, 161–95; *ibid.*, 5 (1927), 195–237; *ibid.*, 6 (1928), 154–77, 275–99.

<sup>87</sup> J. Filliozat, *The Classical Doctrine of Indian Medicine*, trans. D. R. Chanana (Delhi, 1964), 26 and 14; R. E. Emmerick, “Ravigupta's Place in Indian Medical Tradition,” *Indologica Taurinensia*, 3–4 (1975–76), 209–21.

<sup>88</sup> A number of English translations exist of these works and their commentaries, but none is satisfactory.

<sup>89</sup> See J. Filliozat, *Fragments de textes koutchéens de médecine et de magie* (Paris, 1948), 33–34. The work and its commentaries are described in Jampal Kunzang, *Tibetan Medicine in Original Texts* (London, 1973; Berkeley, 1976); E. Finckh, *Foundations of Tibetan Medicine*, Vol. I, trans. F. M. Houser (London, 1978).

<sup>90</sup> For the Indian “history of medicine,” see *The Suśruta-Saṃhitā*, Fasc. I, trans. A. F. R. Hoernle (Calcutta, 1897), 1–13. For the Indian medical oath, *ibid.*, 13–17, and in the version of the Caraka Saṃhitā, see I. A. Menon and H. F. Haberman, “The Medical Students' Oath of Ancient India,” *Medical History*, 14 (1970), 295–99.

ture. The Indian encyclopedias were themselves perhaps based on far earlier, Persian models, of which nothing is known; and if so the *Book of Medicines* may take after a common, ancient Persian source. It is more likely, however, that the Hebrew work followed a Persian or Arabic version of one of these Indian works. The *Suśruta Samhitā* had already been translated into Arabic by about the eighth century, while well before the tenth century the Caraka recension had passed into Arabic from Persian.<sup>91</sup> As regards the Tibetan encyclopedia, the Hebrew work might have been modelled on some Persian or Arabic translation of a common Indian source. However, in the eighth century Nestorian monks from Persia, versed in the literature of ancient Greek medicine, were present in Tibet,<sup>92</sup> and it is possible that they also translated into Syriac Tibetan medical works.

Since the *Book of Medicines* differs in so many respects from other encyclopedias based on Greek medicine, it is not surprising that there has been much speculation regarding its authorship, provenance and dating. In the last century it was generally held to be a pseudepigraphical compilation from around the tenth century.<sup>93</sup> However, since the appearance of the first substantial study of the work, by Venetianer in 1916, the prevailing view has been that it indeed represents the teachings of Asaf, a hitherto unknown Jewish physician. He is thought to have lived in Persia, Palestine, or Mesopotamia, at some time between the third and seventh centuries, although the work was later re-edited and much material added.<sup>94</sup>

<sup>91</sup> They seem to be mentioned in the tenth-century Arabic work, *The Fihrist of al-Nadīm*, ed. and trans. B. Dodge, 2 vols. (New York, London, 1970), II, 710. See also Ullmann, *Medizin*, 103–7.

<sup>92</sup> See C. I. Beckwith, "The Introduction of Greek Medicine into Tibet in the Seventh and Eighth Centuries," *Journal of the American Oriental Society*, 99 (1979), 297–313. On the Nestorians in Tibet, see *Mélanges offerts au R. P. Ferdinand Cavallera* (Toulouse, 1948), J. Dauvillier, "Les Provinces chaldéennes 'de l'extérieur' au Moyen Age," 260–316.

<sup>93</sup> See M. Steinschneider, *Die hebraeische Uebersetzungen des Mittelalters* (Berlin, 1893), 650.

<sup>94</sup> Venetianer, *Asaf Judaeus* (n. 35 above), I, 26 and 39, suggests Mesopotamia in the seventh century at the latest; S. Muntner, *Introduction to the Book of Asaph the Physician* (Hebrew) (Jerusalem, 1957), 39, 50, prefers Palestine or Mesopotamia before 650. The most recent and extreme views—with which I can in no way concur—are those of Melzer, *Asaph* (n. 33 above): "Asaph wrote his book in the middle of the 3rd century, somewhere in Persia" (p. 72), probably in Jundišapur (p. 63). "His chosen student-aide was one Jochanan ben Zavda" (p. 72). "The Munich manuscript [231] is a faithful copy of the original book of Asaph" (p. 72). Some 200 years later a Jewish "Jundishapurian learned professor . . . corrected and completed the manuscript. It is his edition which was extensively copied and publicized" (p. 78), in particular as the Oxford manuscript 2138 (p. 79).

Little objective testimony, internal or external, has so far been presented in support of any of these theories but, on hardly weightier evidence, I personally favor the older view—that this is a pseudepigraphical work, which in some versions was abridged and in others continued to grow by accretion. In this and other ways, such as the fact that the authors' names, though reported, are false, it seems to imitate not only the Indian medical works, but also Israelite non-medical writings from before A.D. 70, and the Biblical pseudepigrapha in particular. These last have been described as "a sort of literary onion which must be peeled, layer by layer, not without tears,"<sup>95</sup> an apt designation indeed for the *Book of Medicines* or, in fact, for the two earliest Indian medical encyclopedias, which also appear to be pseudepigraphical works of this kind.

It is of course possible that the *Book of Medicines* incorporates medical writings from the great Jewish centers of learning in Palestine and Mesopotamia during or before the early Byzantine period, although no evidence exists that they produced any medical works. In the seventh century most of these areas came under Muslim rule but, as has been seen, they remained accessible to the Jews of Byzantine Europe. Yet, just as the language of the work would appear to be a pseudo-Biblical Hebrew from a much later period,<sup>96</sup> so the overwhelming impression is obtained that, while many of the items are taken from ancient Greek writings, others were skillfully composed in medieval times, as a synthesis of Greek and Jewish—predominantly Biblical—concepts. The aim was to simulate ancient Hebrew medical writings, although works of this nature may never have existed at all. "Asaf" represented the Jewish Hippocrates, and Greek, mainly Hippocratic, concepts were carefully chosen to coincide with Jewish ideas. These items were then interspersed with Hebrew versions of genuine ancient Greek works. The latter may even have included translations of the writings of Greek Jewish physicians, such as Rufus of Samaria.<sup>97</sup> It is likely, moreover, that the same author or editor was responsible for determining the Indian encyclopedic form of the work.

<sup>95</sup> See M. Smith, "Pseudepigraphy in the Israelite Literary Tradition," in *Pseudepigrapha*, I, ed. K. von Fritz (Geneva, 1972), 191–227, esp. 195.

<sup>96</sup> On this form of Hebrew as used in the Middle Ages see, Rabin, "The Ancient in the Modern" (n. 79 above), esp. 153. For Melzer's very different views, see *Asaph* (n. 33 above), 73–80 (English) and 352–379 (Hebrew). My thanks are due to Dr. Hadassah Shy, of Beersheba University, for her linguistic assistance.

<sup>97</sup> As suggested by Muntner, *Introduction* (n. 94 above), 171–74.

To this basic structure, however, other material, with a more contemporary flavor, was then added over the years.

As with the writings of Donnolo and the *Book of Yosippon*, certain Greek and Latin terms seem to have been transcribed into Hebrew in an Italianized form<sup>98</sup> and on this and other counts the work may well be a product of Italy, and probably of Byzantine Italy. It has even been suggested that Donnolo had a hand in the work,<sup>99</sup> but this seems unlikely in view of Donnolo's particular astrological interest, and of his adherence to the traditional view that medical works were to be divorced from religion—in both cases in marked contrast with the *Book of Medicines*. Thus, since he almost certainly alludes to material found in the latter work, it would seem to have been in existence before his time, that is, by the beginning of the tenth century at the latest.

Not only is the true author entirely unknown, but the attributions of the work to sages named Asaf and Yoḥanan are equally obscure. No less puzzling is the fact that each is occasionally called an "astrologer" in the text, despite the virtual absence of astrology in the work.

It is impossible to discuss here all the suggestions which have been offered regarding the name Asaf, whereas the choice of "Yoḥanan," as representing the author of certain parts of the work, has been practically ignored. As far as Asaf is concerned, the name occurs several times in the Bible, as one of the Levite singers who ministered to the service in the time of King David and then in the Temple. Moreover, a number of Psalms are attributed to him. However, II Chronicles 29:30 refers to the Levites singing "the words of David and of Asaf the Seer (predicter)." This may have some connection with the fact that the term *āšipu* denotes a particular type of ancient Mesopotamian healer, one who practiced divination.<sup>100</sup> Moreover, Asaf, son of Beraḥyahu, as he is called in several places in the *Book of Medicines*, was in Muslim legend indeed a sage, the vizier of King Solomon.<sup>101</sup> The Hebrew verb *asaf* itself denotes "gathered," or "collected," and hence could refer to a compiler. In the spirit of *melitsah* the possibility of such a play on the name

may also have helped to determine its choice. Yet, all these associations, on their own, would scarcely justify the use of a name of no great Jewish significance to designate an expounder of Jewish-Greek medicine, on a par with Hippocrates and Galen.

I shall therefore throw into the ring an entirely new theory, which provides an additional basis for the names of both "sages." Not only has it some "medical" connotation, but it lies within the Jewish historical tradition. It will be suggested that, like the *Yosippon*, the *Book of Medicines* is ultimately attributed to Josephus, but now in the role of sage, diviner and healer. Certainly Josephus lived in the period apparently ascribed to Asaf in the "historical" introduction to the work, yet today he is known from his works as a soldier and historian alone. It will be recalled, however, that his writings were preserved for posterity mainly through Christian interest, and two medieval Christian texts refer to him in the guise of an astrologer. The first is a Syriac fragment in which Asaf, "the writer and historian of the Hebrews," is said to have written a history of the zodiac, and to have named the signs in Aramaic.<sup>102</sup> Nothing of this is found in the *Book of Medicines*. The reference must be to a Greek work, and Asaf has surely been confused with Josephus, who wrote mainly in Greek, although his native tongue was probably Aramaic.<sup>103</sup> The other, a Latin manuscript composed by a Christian monk, is essentially a cosmographical text, with a section on the planets but no medical content.<sup>104</sup> Although much of it is said to be taken from a work by "Asaf the Jew," the historical aspects seem to be based largely on the Latin Christian versions of the writings of Josephus, and perhaps also on the *Yosippon*.

Parallel with these works, Christian legends representing Josephus as sage, astrologer, diviner, and even healer, were current in Europe before the tenth century and for hundreds of years thereafter.<sup>105</sup> His fame in these roles ultimately springs from his various successful predictions, about which he tells us

<sup>102</sup> A. Mingana, "Some Early Judaeo-Christian Documents in the John Rylands Library. Syriac Texts," *Bulletin John Rylands Library*, 4 (1917), 59–118; J. H. Charlesworth, ed., *The Old Testament Pseudepigrapha*, I (London, 1983), "Treatise of Shem," trans. J. H. Charlesworth, 473–86.

<sup>103</sup> Josephus, *Jewish War* I, 3. Similarly, some of Aesop's fables found in Syriac texts are attributed to Josephus, due to confusion of their names in Syriac: A. Baumstark, *Geschichte der syrischen Literatur* (Bonn, 1922), 26.

<sup>104</sup> Partly transcribed by A. Neubauer, "Assaph hebraeus," *Orient und Occident*, 2 (1864), 657–76 and 767–68. On the basis of this text Neubauer claimed that the Hebrew *Book of Medicines* was the translation of a Latin work by a Christian called Asaf.

<sup>105</sup> See H. Lewy, "Josephus the physician," *JWarb*, 1 (1937), 221–42.

<sup>98</sup> E.g., the transcription of the Italian *flemma* for "phlegm," as already noted by M. Steinschneider, *Hebraeische Bibliographie*, 19 (1879), 38; and see M. Treves, "I termini Italiani di Donnolo e di Asaf (sec. X)," *Lingua Nostra*, 22 (1961), 64–66.

<sup>99</sup> The suggestion was long ago refuted by M. Steinschneider, *Zur pseudepigraphischen Literatur des Mittelalters* (Berlin, 1862), 81.

<sup>100</sup> A. L. Oppenheim, "Man and Nature in Mesopotamian Civilization," *DSB*, XV, Suppl. I, 634–66, esp. 643.

<sup>101</sup> *Encyclopaedia of Islam*, new ed., I (Leiden, London, 1960), s.v. Āṣāf b. Barakhyā, 686.

in his writings, and above all, from that made to Vespasian,<sup>106</sup> which has been mentioned above. As authoritative a work as the Talmud then retails a very similar story,<sup>107</sup> although here it is attributed to a figure far more respected among Jews than Josephus—to his contemporary, the Jewish “sage” Yoḥanan ben Zakai.<sup>108</sup> This version, however, goes on to say that Yoḥanan also managed to reduce a sudden swelling of Vespasian’s foot, by means of a spell. This purely legendary, “medical” addition was then, in its turn, attributed to Josephus by Christian sources. It is already reported around the year 1000 by Landolfus Sagax, a Christian chronicler from southern Italy; but the leg now belongs to Vespasian’s son Titus, and it is said to be actually cured of a disease. Landolfus probably took the story from a cycle of Christian legends,<sup>109</sup> and it must have been adapted from Jewish sources still earlier. As relating to Josephus it should therefore have been available to the author of the *Book of Medicines* by the tenth century or even before.

The attribution of healing powers to a wise rabbi like Yoḥanan is wholly appropriate, but it is not in character with Josephus who, indeed, mentions no incident of such a kind in his works. Thus, although the story led to his widespread reputation as a healing sage throughout the Middle Ages,<sup>110</sup> it may be significant that in the *Book of Medicines* neither Asaf nor Yoḥanan are actually called physicians. When given a title, Asaf is most often known as a sage, while Yoḥanan is an astrologer. This would of course conform with the Biblical tradition,

whereby God alone was the healer. However, by about 1200 the book is already attributed to “Asaf the Physician.”<sup>111</sup>

This complex association of Josephus and Yoḥanan, and their connection with the work, may be taken still further. In Hebrew script “Yosef” the Hebrew name of Josephus, is almost identical with “Asaf,” and in fact in several manuscripts of the work the name “Asaf” is occasionally copied as “Yosef.” Moreover, the name Yoḥanan ben Zakai can easily be confused with that of an even more celebrated Yoḥanan: the apostle John son of Zeb-edee or, in Hebrew, Yoḥanan ben Zabda; and in the oath found in the *Book of Medicines*, Yoḥanan, the supposed part-author, is even called by this name.

The attribution of the work to Asaf the sage and to an astrologer called Yoḥanan, may thus in both cases be derived from this tangled skein of Judeo-Christian legend, all ultimately referring back to Josephus. Similarly, in this same period, after centuries of Jewish neglect, the bare bones of the latter’s own writings were fleshed out in Hebrew and resurrected as the *Book of Yosippon*.

The author of the *Yosippon* clearly appreciated the pro-Jewish nature of the works of Josephus, and thought it time to lift the ban. However, the name of Josephus is never mentioned.<sup>112</sup> It is still felt prudent to attribute his works not to Yosef ben Mattitiah—*the full Hebrew name of Josephus*—but to another Yosef, Yosef ben Gorion, to whom Josephus briefly refers as one of his important military colleagues.<sup>113</sup> Though as far as we know he did not write books, it is much more important in this case that he did not defect to the Romans, and hence did not shame his people. Thus the title, the *Book of Yosippon*, which was later ascribed to the work, though generally considered to be derived from the Greek name of the historian Josephus,<sup>114</sup> probably refers in fact to another “Josephus,” the Greek name of Yosef ben Gorion.

For the very same reason, the *Book of Medicines* was not attributed directly to Josephus, not even in his role as sage, astrologer, or healer. His name was transformed into “Asaf,” with its venerable connotations, in the Bible and elsewhere, as sage, astrologer and healer through divinatory powers.

This is an exoteric hypothesis but, in the Jewish

<sup>106</sup> His earlier predictions included one made in a dream. (*Josephus*, I, [Loeb, trans. Thackeray], *The Life* 208 [42]). Josephus himself claims that once Vespasian had acknowledged his general gift for predicting the future, (*Jewish War* III, 403–7), he called Josephus “a minister of the voice of God” (IV, 626); and “Thus Josephus won his enfranchisement as the reward of his divination, and his power of insight into the future was no longer discredited” (IV, 629).

<sup>107</sup> *BT* (n. 1 above), Gittin 56a. See Lewy, “Josephus the Physician” (n. 105 above).

<sup>108</sup> See Dubnov, *History* (n. 21 above), I, 803–4, which provides a somewhat apologetic and yet adulatory picture of Yoḥanan’s part in the war, and thus in itself illustrates the general Jewish attitude towards him over the generations. He was admired not only for his piety and learning, but because, even before the fall of Jerusalem to the Romans (which he is said to have predicted), “he was preparing for the social and spiritual rehabilitation of the nation that would be politically shattered.” This attitude must be contrasted with that of the worldly, “Hellenistic” Josephus, who after the war lived in luxury in Rome. See also note 20 above.

<sup>109</sup> See Lewy (n. 105 above), on the origins of this story, cited by Landolfus Sagax, *Historia miscella*, ed. Fr. Eyssenhardt (1869) IX, 2, p. 194.

<sup>110</sup> Lewy (n. 105 above), not only speaks of “Josephus the physician,” but he goes as far as to claim that he appeared to the medieval reader as a kind of “court physician.”

<sup>111</sup> See note 36 above.

<sup>112</sup> See Flusser, *Josippon* (n. 17 above), I, 299 note 2, and II, 69.

<sup>113</sup> Joseph ben Gorion was put in control of Jerusalem during the war, together with the high priest. *Jewish War* II, 563.

<sup>114</sup> Flusser, *Josippon* (n. 17 above), II, 69.

tradition of *melitsah*, so prevalent in the *Book of Medicines*, it may well find support in a Biblical play upon words. For Genesis 30 seems to furnish still another association between the names Yosef and Asaf—perhaps even in a “medical” context.<sup>115</sup> According to verses 1–8, Rachel was barren, and her first two sons were in fact borne by her maid. Finally, however, God granted her a son of her own, upon which she said (verse 23), in the words of the Authorized Version: “God has taken away my reproach,” and in a less picturesque, literal translation: “God has gathered up (*asaf*) my shame.” The next verse continues: “And she called his name Joseph (*Yosef*) saying: God adds (*yosef*) to me another son.” And when associated with the *Yosippon*, it seems to indicate to the reader “in the know” that the past “shame” of Josephus should now also be forgiven, even though his works are still ascribed to “another son,” that is, to another Yosef. Whether or not this be the case, the author of the *Book of Medicines* must have been well aware that Josephus was no medical man; hence the work was similarly ascribed to “another son,” another Yosef, this time entitled “Asaf.”

Among Jewish medical works in Hebrew and Arabic the *Book of Medicines* is unique in trying to establish Jewish roots in its particular field. Yet, as

has been seen, it in no way denies the validity of pagan Greek concepts. On the contrary, it produces Jewish and even Biblical credentials for their use. Perhaps this apologetic aspect of the work was partly a reaction to a general backlash to non-priestly medicine, which seems to have been prevalent in the Byzantine world at this time. Donnolo himself had his offer of medical aid rebuffed by Nilus the monk, with the words that Jesus alone was his healer.<sup>116</sup> Even the *Book of Medicines* surrenders at times to this trend. Before the students of medicine swear their medical oath to Asaf and Yoḥanan, their teachers, they receive a solemn warning from them, composed in true *melitsah*, as a mosaic of phrases from the Bible:

And now put your trust in the Lord your God:  
a true God, a living God.  
For it is he who kills and makes live;  
who wounds and who heals.<sup>117</sup>

Even Asaf and Yoḥanan, with all their enthusiasm for ancient Greek thought, must remind their pupils that the ultimate healer is God and not man.

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<sup>115</sup> I am most grateful for this suggestion to Professor D. Berger of Brooklyn College, New York, who is obviously one of “those in the know.”

<sup>116</sup> *Nili junioris vita* VII, 50. PG, vol. 120, col. 92C–93A.

<sup>117</sup> These phrases bring to mind Ps. 115:2–11; Isaiah 36:7 = II Kings 18:22; and Deuteronomy 32:39.